Electerical Engineering

AN ADAPTIVE APPROACH TO AUTOMOTIVE CONTROL OF ENVIRONMENTAL CONDITIONS

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ABSTRACT:

During the hot summer days and evenings, there is the general tendency for people to leave the windows of their vehicles down (open) for purposes of allowing free air circulation and reducing the scotching air temperature inside the vehicles. Accompanying these cultural dynamics is equally the tendency of people forgetting that the windows are down and thereby minimizing the chances for sudden outpouring of rain during the summer months. These conflicting attributes of our cultural dynamics constitute a problem that requires an adaptive approach to optimize the controlling mechanisms of the weather conditions relative to the operations of our vehicles.

This research effort is an attempt to extend an earlier investigation of the extreme weather conditions during the cold winter months to include similar weather conditions in the hot summer months. An adaptive approach using a micro-controller based system is being investigated. The methodology requires the integration of several essential components namely: programmable timer, remote starter device, and vehicle control unit. While the programmable timer is directly integrated with the remote starter device, the vehicle control unit operates as a watchdog. The vehicle control unit can be programmed to turn the engine ON or OFF at a specified future time. The capability of being able to cause the vehicle engine to start or stop at a specified time offers ample opportunity for many other electronic devices of automobiles in general such as heater, defroster, air conditioner, etc.

The benefit of this improved system is not limited to the cold winter months when there is the need to turn on the heater and the window defroster after the vehicle has run for some specified period of time, but also in the hot summer months when there is equal need to turn on the air conditioner. The vehicle control unit, which also operates as a watchdog, scans vehicles electrical system for environmental conditions, in order to lower windows on high temperature days and raise windows at times during adverse weather conditions. Also the intrusion detection circuitry will switch the vehicle to the alarm mode after a period of time when the vehicle is unattended.

Submitted for presentation at the 14th Annual Symposium for Undergraduates in Science, Engineering, and Mathematics, Argonne National Laboratory, Division of Educational Programs, Argonne, Illinois 60439, October 24-25, 2003.